

Claims

1. A method for facilitating a determination of a linear dimension of an objection from image (2,41,8) of the object formed by an image forming process (1,50), characterised in that the method comprises the step of computing the magnification of the image (2,41) formed in an image plane (4) of the image forming process (1,50) relative to the object for facilitating the derivation of a measuring scale (12,42,14) for subsequent reproduction along with a reproduction of the image (2,41,8), the magnification of the reproduced measuring scale (12,42,14) corresponding to the magnification of the reproduced image (2,41).
2. A method as claimed in Claim 1 characterised in that the measuring scale (12,42,14) is derived from the computed value of the magnification of the image (2,41).
3. A method as claimed in Claim 1 or 2 characterised in that the measuring scale (12,42) derived from the computed value of magnification of the image (2,41) is formed in the image plane (4) along with the image (2,41).
4. A method as claimed in any preceding claim characterised in that the computed value of the magnification of the image (2) is stored.
5. A method as claimed in Claim 4 characterised in that the image is stored, and the stored computed value of the magnification of the image (2) is stored separately from the stored image (2) but correlated therewith.
6. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is stored.
7. A method as claimed in Claim 6 characterised in that the measuring scale (12,42) is stored separately from the stored image (2) but correlated therewith.

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8. A method as claimed in any of Claims 4 to 7 characterised in that the stored computed values of the magnification of the image (2) and the measuring scale (12,42) are stored electronically.

5 9. A method as claimed in Claim 8 characterised in that the stored computed values of the magnification of the image (2) and the measuring scale (12,42) are stored in digital format.

10 10. A method as claimed in any preceding claim characterised in that the magnification of the image (2) is computed as a function of the distance of the image plane (4) from the optical centre (24) of a lens (21) which forms the image (2) of the object, and the focal length of the lens (21).

15 11. A method as claimed in Claim 10 characterised in that the method further comprises the step of determining the distance of the image plane (4) from an optical centre (24) of the lens (21) which forms the image (2) of the object.

20 12. A method as claimed in Claim 10 or 11 characterised in that the method further comprises the step of determining the focal length of the lens (21).

25 13. A method as claimed in any of Claims 10 to 12 characterised in that the magnification of the image (2) is computed under the R.P. Convention by dividing the distance of the image plane (4) from the optical centre (24) of the lens (21) by the focal length of the lens (21) and subtracting the value one from the quotient of the division.

30 14. A method as claimed in any of Claims 10 to 12 characterised in that the magnification of the image (2) is computed under the N.C. Convention by dividing the distance of the image plane (4) from the optical centre (24) of the lens (21) by the focal length of the lens (21) and subtracting the quotient of the division from the value one.

15. A method as claimed in any of Claims 10 to 14 characterised in that the distance of the image plane (4) from the optical centre (24) of the lens (21), and the focal length of the lens (21) are determined by electronic computing (26).
- 5 16. A method as claimed in any of Claims 10 to 14 characterised in that the distance of the image plane (4) from the optical centre (24) of the lens (21) and the focal length of the lens (21) are determined mechanically.
17. A method as claimed in any preceding claim characterised in that the computation of the magnification of the image (2) relative to the object is carried out by electronic computing (26).
18. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is adapted to be formed in the image plane in a desired location relative to the image of the object.
- 15 19. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is adapted to be moveable in the image plane (4) relative to the image (2).
- 20 20. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is formed adjacent at least one edge (17,18) of an area of the image plane (4) within which the image (2) is formed.
- 25 21. A method as claimed in Claim 20 characterised in that a pair of measuring scales (12) are formed adjacent a pair of adjacent edges (17,18) of the area of the image plane (4) within which the image (2) is formed.
- 30 22. A method as claimed in Claim 20 or 21 characterised in that the measuring scale (12) is formed around the periphery of the area of the image plane (4) within which the image (2) is formed.

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24. A method as claimed in any preceding claim characterised in that the
5 measuring scale (12) is formed by a plurality of spaced apart graduations (15).

10 26. A method as claimed in any of Claims 1 to 23 characterised in that the measuring scale (42) is provided by a circle (43), the diameter (42) of which corresponds to one or more measuring units.

28. A method as claimed in Claim 27 characterised in that the type and number of measuring units to which the diameter (42) of the circle (43) corresponds are displayed within the circle (43).

25 30. A method as claimed in Claim 29 characterised in that the diameter line (42) extends horizontally.

32. A method as claimed in any of Claims 1 to 30 characterised in that the measuring scale (12,42) corresponds to the British Imperial System.

33. A method as claimed in any preceding claim characterised in that the image and the measuring scale (12,42) is formed on a receiving means (3,52) in the image plane (4).

34. A method as claimed in Claim 33 characterised in that the receiving means (3,52) comprises a photosensitive medium (3,52).

35. A method as claimed in Claim 33 or 34 characterised in that the receiving means (3,52) comprises a charge coupled device.

36. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is formed by a light projecting means (35).

37. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is formed by a light masking means.

38. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is formed by an electronic forming means (26).

39. A method as claimed in any of Claims 1 to 37 characterised in that the measuring scale (12,42) is formed by a mechanical forming means.

40. A method as claimed in any preceding claim characterised in that the measuring scale (12,42) is converted to electronic signals.

41. A method as claimed in any preceding claim characterised in that the image (2) is converted to electronic signals.

42. A method as claimed in Claim 40 or 41 characterised in that the electronic signals are analogue signals.

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43. A method as claimed in Claim 40 or 41 characterised in that the electronic signals are digital signals.

44. A method as claimed in any preceding claim characterised in that the image forming process (1,50) is a photographic image forming process.

45. A method as claimed in any of Claims 1 to 43 characterised in that the image forming process (1,50) is a telephotographic image forming process.

46. A method as claimed in any of Claims 1 to 43 characterised in that the image forming process (1,50) is a video forming process.

47. Apparatus for facilitating a determination of a linear dimension of an object from an image (2,41,8) of the object formed by an image forming process characterised in that the apparatus (10,51) comprises a computing means (26) for computing the magnification of the image (2,41) formed in an image plane (4) of the image forming process relative to the object for facilitating the derivation of a measuring scale (12,42,14) for subsequent reproduction along with a reproduction of the image (2,41,8), the magnification of the measuring scale (12,42,14) corresponding to the magnification of the reproduced image (2,8).

48. Apparatus as claimed in Claim 47 characterised in that a means (26) is provided for deriving the measuring scale (12,42) from the computed value of the magnification of the image (2,41).

49. Apparatus as claimed in Claim 47 or 48 characterised in that a means (35) for forming the measuring scale along with the image is provided.

50. Apparatus as claimed in any of Claims 47 to 49 characterised in that a magnification storing means (56) is provided for storing the computed value of the magnification of the image (2,41).

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51. Apparatus as claimed in any of Claims 47 to 50 characterised in that a measuring scale storing means (56) is provided for storing the measuring scale (12,42).

5 52. Apparatus as claimed in any of Claims 47 to 51 characterised in that an image storing means (56) is provided for storing the image (2,8).

53. Apparatus as claimed in any of Claims 50 to 52 characterised in that the magnification storing means and the measuring scale storing means are separate from the image storing means but correlated with the image storing means.

54. Apparatus as claimed in any of Claims 47 to 53 characterised in that a means (30) for determining the distance of the image plane (4) from the optical centre (24) of a lens (21) which forms the image of the object is provided.

15 55. Apparatus as claimed in any of Claims 47 to 54 characterised in that a means (32) for determining the focal length of the lens (21) is provided.

20 56. Apparatus as claimed in Claim 54 or 55 characterised in that the computing means (26) computes the magnification of the image (2,41) from signals received from the means (30) for determining the distance of the image plane (4) from the optical centre (24) of the lens (21) and from signals received from the means (32) for determining the focal length of the lens (21).

25 57. Apparatus as claimed in any of Claims 54 to 56 characterised in that the means for determining the distance of the image plane (4) from the optical centre of the lens comprises a first sensing means (30) for sensing the position of the lens relative to the image plane.

30 58. Apparatus as claimed in Claim 57 characterised in that the first sensing means (30) is an electronic sensing means.

60. Apparatus as claimed in Claim 57 characterised in that the first sensing means (30) comprises a combination of an electronic and a mechanical sensing means.

62. Apparatus as claimed in Claim 61 characterised in that the input means comprises a manual inputting means.

64. Apparatus as claimed in Claim 63 characterised in that the second sensing means (32) is an electronic sensing means.

66. Apparatus as claimed in any of Claims 63 to 65 characterised in that the second sensing means (32) comprises a reading means for reading a code on the lens indicating the focal length of the lens.

67. Apparatus as claimed in any of Claims 47 to 66 characterised in that a focal length storing means is provided for storing the focal length of the lens.

69. Apparatus as claimed in any of Claims 47 to 68 characterised in that the means (35) for forming the measuring scale (12,42) is adapted for facilitating movement of the measuring scale in the image plane relative to the image.

71. Apparatus as claimed in any of Claims 47 to 70 characterised in that the means (35) for forming the measuring scale (12,42) forms the measuring scale adjacent two adjacent edges of the area of the image plane within which the image is formed.

73. Apparatus as claimed in Claim 72 characterised in that the graduations (15) of the measuring scale are equi-spaced apart.

74. Apparatus as claimed in any of Claims 47 to 73 characterised in that the means (35) for forming the measuring scale (12,42) forms the measuring scale in the form of a circle (43), the diameter (42) of which corresponds to one or more measuring units.

75. Apparatus as claimed in Claim 74 characterised in that the means (35) for forming the measuring scale (42) displays the type and number of measuring units to which the diameter (42) of the circle (43) correspond.

76. Apparatus as claimed in Claim 75 characterised in that the type and number of measuring units to which the diameter of the circle corresponds is displayed within the circle (43).

77. Apparatus as claimed in any of Claims 74 to 76 characterised in that the means for forming the measuring scale forms a line corresponding to a diameter through the circle (43).

78. Apparatus as claimed in Claim 77 characterised in that the line corresponding to the diameter (42) of the circle extends horizontally across the circle (43).

79. Apparatus as claimed in any of Claims 47 to 78 characterised in that the measuring scale (12,42) corresponds to the metric measuring system.

80. Apparatus as claimed in any of Claims 47 to 78 characterised in that the measuring scale (12,42) corresponds to the British Imperial Measuring System.

81. Apparatus as claimed in any of Claims 47 to 80 characterised in that a receiving means (3,52) is located in the image plane (4) for receiving the image.

82. Apparatus as claimed in Claim 81 characterised in that the receiving means (3,52) comprises a photosensitive medium.

83. Apparatus as claimed in Claim 81 or 82 characterised in that the receiving means (3,52) comprises a light sensitive photographic medium.

84. Apparatus as claimed in any of Claims 81 to 83 characterised in that the receiving means (3,52) comprises a charge coupled device.

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85. Apparatus as claimed in any of Claims 81 to 84 characterised in that the means (35) for forming the measuring scale (12,42) is adapted for forming the measuring scale on the receiving means (3,52).

5 86. Apparatus as claimed in any of Claims 81 to 85 characterised in that the means (35) for forming the measuring scale (12,42) comprises a light projecting means (35) for projecting light onto the receiving means (3) for forming the measuring scale thereon.

10 87. Apparatus as claimed in any of Claims 81 to 86 characterised in that the means (35) for forming the measuring scale (12,42) comprises a light masking means.

15 88. Apparatus as claimed in any of Claims 81 to 87 characterised in that the means (26) for forming the measuring scale comprises an electronic forming means for electronically forming the measuring scale.

20 89. Apparatus as claimed in any of Claims 81 to 88 characterised in that the means for forming the measuring scale comprises a printing means for printing the measuring scale on the receiving means.

25 90. Apparatus as claimed in any of Claims 47 to 89 characterised in that the magnification storing means, the image storing means and the measuring scale storing means are provided by electronic storing means.

91. Apparatus as claimed in any of Claims 47 to 90 characterised in that the magnification value of the image is stored in a digital format in the magnification storing means (56).

30 92. Apparatus as claimed in any of Claims 47 to 91 characterised in that the measuring scale is stored in a digital format in the measuring scale storing means (56).

93. Apparatus as claimed in any of Claims 47 to 92 characterised in that the apparatus (10,51) is adapted for use in a photographic camera.

5 94. Apparatus as claimed in any of Claims 47 to 92 characterised in that the apparatus (10,51) is adapted for use is a telephotographic camera.

95. Apparatus as claimed in any of Claims 47 to 92 characterised in that the apparatus (10,51) is adapted for use in a video camera.

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96. Apparatus as claimed in any of Claims 47 to 92 characterised in that the apparatus (10,51) is adapted for use in a digital camera.

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97. Apparatus as claimed in any of Claims 47 to 96 characterised in that the apparatus (10,51) is adapted for incorporation into a photographic camera.

98. Apparatus as claimed in any of Claims 47 to 96 characterised in that the apparatus (10,51) is adapted for incorporation into a telephotographic camera.

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99. Apparatus as claimed in any of Claims 47 to 96 characterised in that the apparatus (10,51) is adapted for incorporation into a video camera.

100. Apparatus as claimed in any of Claims 47 to 96 characterised in that the apparatus (10,51) is adapted for incorporation into a digital camera.

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101. A camera characterised in that the camera comprises the apparatus (10,51) as claimed in any of Claims 47 to 100.

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102. A camera as claimed in Claim 101 characterised in that the camera is a photographic camera (1).

103. A camera as claimed in Claim 101 characterised in that the camera is a telephotographic camera (50).

5 104. A camera as claimed in Claim 101 characterised in that the camera is a video camera.

105. A camera as claimed in Claim 101 characterised in that the camera is a digital camera (50).

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